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ABSTRACT

Four pairs of concepts important for the descriptions of the language or form of objective statements are described. The paper addresses itself to a set of questions concerning the relations between the form of educational objectives and the function which those objectives serve. The concept pairs considered are general-specific, behavioral-nonbehavioral, clear-vague, and observable-unobservable. The types of functions for objectives considered are instructional planning, curriculum planning, and evaluation planning. It is argued that the best form for the expression of educational objectives depends on the function of the objective. This document has been reproduced from the best copy available. (Author)

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STATEMENTS OF EDUCATIONAL OBJECTIVES: FORM AND FUNCTION

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There has been a great deal of recent interest in education concerning the stating of educational goals and concerning the form or language in which educational goals ought to be stated. In this paper we wish to contribute to the discussion of these issues in two ways. First, we shall attempt to develop a more sophisticated vocabulary for describing the form or language in which educational goals may be stated. Second, we shall apply this language to a discussion of the forms of goal-statements most appropriate to the contexts of curriculum planning, instructional planning and to the context of the evaluation of educational programs. We shall argue that there are some important differences in the goal format most appropriate for these three contexts.

To begin, we shall introduce four of what we shall call "format categories" and three of what we shall call "usage categories." A format category will characterize some logical feature of a goal. Usage categories will concern the types of situations in which goal language may be used.

Each of our format categories consists of a concept and its opposite. They are as follows:

General - Specific

Observable - Unobservable

Behavioral - Non-behavioral

Clear - Vague

The usage categories are:

Curriculum Planning

Instructional Planning

Evaluation Planning

Before beginning detailed discussion of these categories the following general remarks may prove helpful.

First, given the four format categories with two possibilities in each category, there are 32 possible permutations which a particular goal-statement might exemplify. In fact, since we shall suggest that there are important distinctions to be made within each category the actual number of possibilities will be much larger.

Second, it is more important to be clear initially that each of our format categories is logically independent of all the others. There is what we believe to be a rather unhappy trend in the literature on objectives to assume that a behavioral objective is automatically also specific, observable, and clear, and that non-behavioral objectives are also necessarily general, unobservable and vague. We believe that the tendency to accept this "packaging" of goal language has seriously restricted thought on the topic of useful ways of expressing educational goals, and we shall give attention to the ideology which leads to it.

Our major concern in what follows will be to articulate the format categories. In each case we shall discuss some of

the conceptual properties of each category, show how it relates to the other categories, and attempt to exhibit some of its value as an intellectual tool usually by relating it to a usage category.

I. ALTERNATIVE IDEOLOGIES

It will be most efficient to start with a discussion of the ideology of one viewpoint concerning appropriate goal language. Consider for a moment the following remarks by Robert Mager.

> An objective is an intent communicated by a statement describing a proposed change in a learner--a statement of what the learner is to be like when he has successfully completed a learning experience. It is a description of a pattern of behavior (performance) we want the learner to be able to demonstrate. As Dr. Paul Whitmore once put it, "The statement of objectives of a training program must denote measurable attributes observable in the graduate of the program, or otherwise it is impossible to determine whether or not the program is meeting the objectives."[1]

The argument is simple. If we are to be able to recognize when we have succeeded, we need goals which we can observe and measure. Obviously so far as learning is concerned it is behavior which can be observed and measured. Thus, proper educational goals, i.e., those which can be observed and measured, must be behaviors.

The argument is invalid. Even if it is granted that all educational goals should be capable of being empirically tested for and if it is granted that concerning learning only behaviors are observable and measurable, the strongest claim needed to satisfy the demands of Mager's position is that a proper educational goal is one which is linked with some behavior or behaviors such that those behaviors constitute evidence that the goal has been achieved. This is a rather different thing from requiring objectives which are behaviors. In short, this

standard argument for the use of behavioral objectives in education requires not behavioral objectives, but behavioral evidence.

The distinction between behavioral objectives and behavioral evidence is important, for a demand for behavioral objectives has consequences beyond a demand for objectives which are properly linked to behavioral evidence. This point can be best made by a brief excursion into the philosophy of language.

In the first half of this century philosophers of several persuasions held a theory of meaning which can be adequately rendered as follows: A term is meaningful if and only if it has an intersubjectively observable referent. One version of this doctrine stemming from logical positivism was called the verificationist theory of meaning. Another version with historical connections to pragmatism was termed operationalism. Skinner provides a quotable version of such a view.

> Operationism may be defined as the practice of talking about (1) one's observations, (2) the manipulative and calculational procedures involved in making them, (3) the logical and mathematical steps which intervene between earlier and later statements, and (4) nothing else. [2]

Let us inspect the consequences of such a theory of meaning for the language of educational objectives. First, ex hypothesi on the view only observable goals are meaningful. It follows that to the degree that an educational goal term does not refer to something observable the term will be meaningless. Thus, this theory of meaning or concept formation renders it plausible to consider terms with observable referents as inherently meaningful or clear and conversely to consider terms with unobservable referents as inherently meaningless, unclear or vague.

To this view one may easily add the plausible assumption that insofar as we are talking about human learning those terms which turn out to have observable referents refer to input and output variables or to behavior and to the external conditions under which it may be expected to occur. Thus, the theory of meaning under consideration quickly leads to the view that those goal terms which are meaningful are those which refer to observable behavior.

Such goals will also turn out to be specific. Consider that concerning human learning the kind of vocabulary which will fail to meet the standards set by this theory of meaning is a cognitive or mentalistic vocabulary. It is words like 'knows,' 'understands,' and 'appreciates' that many behavioral objectives advocates have wished to purge from the goal language of education. But it is plausible to hold that such terms often function as the theoretical vocabulary of learning theory. What a theoretical vocabulary does in any scientific language is to summarize a variety of complex relations in an economical fashion. If we know, for example, that a student possesses a certain cognitive skill we know by implication that he will be capable of a variety of different behaviors given a variety of different circumstances. On a different theory of meaning these behaviors would be treated as evidence for the possession of the cognitive skill. If, however, we hold a theory of meaning which requires only observable referents, cognitive skill goals will be replaced by those behaviors which would otherwise contribute evidence for such goals. In other words if we must have behavioral objectives instead of behavioral evidence, we

will be lead to replace more general cognitive goals with their more specific behavioral instances.

Thus, if we begin with the assumption that all meaningful terms must have observable referents we easily come to a view of the nature of educational goal language which has the following features.

1. Meaningful goals are those which are observable and behavioral. Goal terms which appear to have non-observable and non-behavioral referents are in reality vague or meaningless.
2. No distinction between goals and the behavioral evidence for goals is recognized.[3]
3. Proper goals are specific, not general.

Since such views about the nature of proper educational objectives are obviously very much with us it will be useful to briefly comment on the theory of meaning which lends them support. Historically, the doctrine that every meaningful term has an observable referent was often intended to distinguish science from metaphysics. It was supposed to pick out meaningful empirically testable propositions and distinguish them from untestable non-empirical nonsense. The doctrine in this strict form is no longer widely held largely because it failed to do this.

The basic difficulty was that in this early form the doctrine relegated most of the theoretical vocabulary of physics into the garbage can of metaphysics. Terms like 'electron' obviously do not refer to anything observable. Further, attempts to show that such terms could be exhaustively analyzed into empirical terms with no non-empirical "surplus" meaning are

widely considered to have failed. It appears as though the view that all meaningful terms have empirical referents is too restrictive.

Many contemporary philosophers (including many of those who developed the earlier forms of such "criteria of empirical significance") have come to accept theories of meaning which are much less restrictive than the one we have been discussing. Indeed, it is often held that a term is acceptable in a scientific language if it occurs non-vacuously in some scientific theory such that that theory is able to generate some testable empirical claims. Obviously such views do not require every meaningful term to have an empirical referent. They do not even require each term to have its own operational definition so long as the term is used in an otherwise testable theory.

These weaker criteria of empirical meaningfulness support a rather different view of the nature of acceptable educational objectives. We may compare what is suggested by such views to the three features which we indicated were implied by the more restrictive viewpoint.

1. A meaningful goal is one for which some plausible empirical test can be suggested. Such goals need be neither observable nor behavioral so long as there is observable or behavioral evidence for them.
2. A distinction between goals and the behavioral evidence for the goals is permitted.
3. General goals are not objectionable. Further, there is no longer any reason to assume that general goals will be any less clear or precise than specific ones.

Having now developed two alternative views concerning the nature of empirically testable educational objectives permit us to label the former view the "behaviorist"[4] view and the latter view the "moderate empiricist" view. Now we have already suggested some reasons for preferring a moderate empiricist view to a behaviorist view. The doctrine which gives rise to the behaviorist view has proven incapable of distinguishing acceptable scientific statements from unacceptable ones in the natural sciences. There is no reason we can see that would suggest that the view will prove any more successful in its application to the sciences of man. If we are right, an attempt to apply or enforce a "behaviorist" viewpoint in education will be that in some cases educators will have to choose between an objectionable atomism of the curriculum and a kind of verbal hocus pocus used to describe non-behavioral objectives in the acceptable behavioral objective vocabulary. For example, a recent career education curriculum guide suggested as a behavioral objective concerning the teaching of work values that the student will exhibit "dignity behavior." This is, of course, merely a euphemism for the goal of the student coming to have a healthy self concept re his selected occupation. It is a non-behavioral objective wearing the verbal clothing of a behavioral objective. Anyone who believes that the phrase "dignity behavior" represents an improvement over the description "having a healthy self-concept re his selected occupation" no doubt also believes in incantations and magic. Before one becomes too critical, however, it would be useful to ask how such an objective might have been rendered into specific behavioral descriptions. Dignity is a general goal with a very

large range of possible behavioral exemplifications. Any of these behaviors might under proper conditions serve as evidence that the student has achieved the goal. None of these behaviors nor any combination of them make an effective substitute for it. It, thus, appears unlikely that the goal is likely to be effectively rendered into a finite number of specific behavioral objectives. The phrase "dignity behavior" appears to be a compromise between the educator's desire to preserve a meaningful objective and his commitment to behavioral objectives. He has opted for some verbal hocus pocus over behaviorist atomism.

For our purpose, however, the basic reason for preferring a moderate empiricist view of educational objectives to a behaviorist view is the pragmatic one that the moderate empiricist view provides a framework within which questions concerning the relations between the language form of educational objectives and the function objectives are to perform may be meaningfully addressed. Such questions are not particularly interesting from a behaviorist perspective because there is only a single acceptable form for objectives. Good objectives are specific, observable, behavioral, and clear, and these properties are properties of good objectives regardless of the functions the objectives are supposed to perform or the context in which they are to be used. A moderate empiricist view does not require such a package and, thus, opens up a whole area of inquiry which has been insufficiently attended to concerning how the verbal form of an educational objective relates to the intellectual or practical function of the goal. What is needed is first some

conceptual spadework in order to develop and clarify some categories for the description of an educational goal language. This will require a discussion of concepts such as generality and specificity. Second, some plausible hypotheses concerning the appropriateness of educational goals exhibiting various particular forms to various functional contexts will need to be generated. We will turn now to the first of these tasks.

II. THE FORMAT LANGUAGE

Words such as 'general,' 'specific,' 'clear,' 'vague' or 'behavioral' are often used to characterize educational goals without much attention being given to exactly what these terms mean. In this section we will attempt to provide appropriate commentary of some of the more interesting conceptual features of those concepts which provide the basic categories of our format language.

General-Specific

The most interesting thing about generality is that there are two kinds of it. We wish to distinguish what we shall call range generality or R-generality from what we shall call level generality or L-generality. Analogously there will be R-specificity and L-specificity.

The R-generality of a concept concerns the number of instances of that concept. Concept A is more R-general than concept B if it has more members. In this sense of general the concept ant is more general than the concept man.

The L-generality of a concept concerns its level of abstractness or its level of remoteness from particulars. Thus, the concept insect is more L-general than the concept ant because it contains it. The concept animal is more general than either.

Of course, an increase in L-generality is likely to increase R-generality as well, although it need not since a particular concept, A, may only have a single subordinate concept, B, in which case A will be more L-general than B, but will be identically R-general. More interestingly concepts exhibiting sameness of L-generality but which are in different concept hierarchies

need not be even remotely similar in R-generality. The concept of a primate is, for example, more L-general and less R-general than the concept of an ant.

How do these types of generality relate to the various usage contexts? First, we believe that curriculum planning is often a matter of working from goals which are L-general and discovering subordinate goals which are L-specific. Consider, for example, the goal of teaching a student how to think. Part of the process of creating a curriculum which exemplifies such a goal will be a matter of discovering particular skills, concepts, and strategies which are part of the ability to think or which assist in thinking about something. In many cases the skills and concepts of interest will depend on what one wishes the student to be able to think about. Others may apply independently of the subject matter. For example, consider a particular rule of inference usually called Modus Ponens. ($p \supset q$, p, therefore, q; this may be read "If proposition p implies proposition q, and if p is true, then q is true.") A person who can apply Modus Ponens knows a particular skill, one which will be useful in deriving conclusions from premises and which is, thus, part of the ability to think. It is a specific skill. Indeed, it is at the lowest level of L-specificity in that there are no subsidiary skills which comprise Modus Ponens. One has not got a curriculum until he has identified a reasonable number of such specific goals. We suspect that this is not because there is something inherently wrong with general goals such that they need to be replaced by specific ones. Rather, L-general goals often can be aimed at only by aiming at more L-specific goals which comprise the L-general goal. Thus, until

the L-specific components of an L-general goal have been identified, it is difficult to know how to proceed.

This argument suggests that L-general goals have important intellectual functions to perform in determining curriculum. Two such roles should be mentioned.

1. L-general goals justify and lend coherence to L-specific goals. They are an essential element of a rational process for the derivation and justification of L-specific goals. Often the point of aiming at an L-specific goal is that one is thereby aiming at an L-general goal.

2. L-general goals are necessary for curriculum policy discussions. When we need to decide basic issues about the kinds of things to be taught we will conduct the discussion in terms of L-general goals.

The curriculum, those goals at which we aim directly, is likely to be composed of L-specific goals. It is important to note, however, that R-specificity is not a desirable property for this basic level of educational goals. Consider again, for example, Modus Ponens. The goal is at the lowest level of L-specificity, but it is highly R-general. This particular rule, much like a particular rule of grammer has a potentially infinite number of instances. Any argument which exhibits this "logical form" will be an instance of Modus Ponens.

R-generality is, of course, a highly desirable feature of an educational goal. To learn an R-general goal is to learn a lot by learning a little. This is, of course, a central feature of the emphasis of people like Bruner on generative concepts and the structure of knowledge. Some specific skills and concepts have large numbers of instances which are potentially

available to a person who has learned these skills and concepts. One need not learn each instance separately.

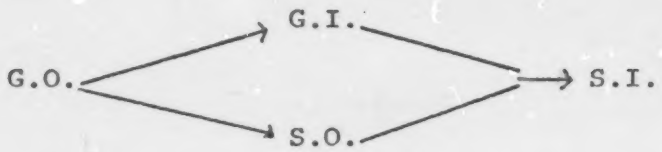
Conversely, R-specificity is an objectionable feature of an educational goal. An R-specific goal sheds light on nothing but itself. It has no transfer potential in it. Thus, teaching R-specific goals is rather like teaching a foreign language by teaching each properly formed sentence independently of all the rest without teaching the rules of grammar. A rather tedious and lengthy process.

These arguments suggest an obvious moral concerning the nature of those goals which form the basic level of a curriculum. Such goals should be L-specific and R-general.

For purposes of evaluating educational programs we will need an evidence language which is both L-specific and R-specific. Consider that while one can know, understand, or be able to employ an R-general skill, one can only do an instance of such a skill. One can only do specific things, not general things. Typically, then a language which describes what to look for in order to determine whether or not a goal has been accomplished will be both L-specific and R-specific.

The connection between specificity and generality and instructional planning is perhaps even more complicated than the above. The following suggests one possible pattern. General instructional strategies may be justified in terms of L-general objectives. Bruner's claim that the heuristics of thought are best learned by a discovery method of teaching will serve as an example. General instructional strategies will then be particularized for specific instructional situations given the features of L-specific goals. Thus, a typical pattern

of thought from objectives to instructional strategies might be diagrammed as follows.



G.O. = L-general objectives; G.I. = general instructional strategy; S.O. = L-specific objectives; S.I. = specific instructional strategies.

It would appear, then, that for instructional planning both L-specific and L-general objectives have important intellectual functions to perform.

Observable - Unobservable

I see that he is going to the store.

I see that he is enjoying himself.

I see that he is interested in music.

I see that he is hungry.

I see that he is smiling.

Can we literally see such things? Or is the word 'see' in some of the above merely a metaphor reporting what we infer from what we see? The point of these questions is that the distinction between what is and is not observable is not as clear cut as we often seem to suppose. Can we see that a person is going to the store, or do we just infer that he intends to go to the store from his observed movements? If we accept the view that very often expressions of the sort "I see that he is doing X" report some observed movements and an inference from them to what is intended we will find that most human actions turn out to consist not in observable behavior

but in observable movements and inferences from those movements to some mental state. On such an analysis the domain of observable behavior will not include most of what people do, and this will exclude most of the sorts of behavior which educators wish to produce. On the other hand, if we expand the concept of the observable so that sentences like "I see that he is going to the store" and "I see that he is enjoying himself" use the word 'see' in a non-metaphorical way, we expand the concept of the observable to be considerably broader than much of recent philosophy and the behavioral sciences has held it to be. Further, the distinction between what we can and cannot observe becomes a matter of degree.

A commonplace view in the behavioral sciences is that terms are defined when they are linked with some test or observation which enables us to identify their referents. Such definitions are typically called operational definitions. What we wish to do in what follows is to distinguish operational definitions from what we shall call "formula" definitions.

An operational definition is a statement which links a term to be defined with some test or observation by means of which the referent of that term can be identified. A proper result on such a test or the occurrence of the relevant observation entitles us to infer the presence of a particular entity, state, or event. For example, a cloud chamber streak with certain properties entitles us to infer the presence of an electron.

A formula definition is a sentence which defines a term by telling us what it means. It does this by specifying the essential properties which a thing must have or the criteria

it must fulfill to be a thing of that sort. A formula definition distinguishes a thing's essential properties from its accidental properties. "Man is a rational animal" is a classical formula definition of man.

Consider, for example, the concept of propositional or factual knowledge. How would we define some particular instance of knowledge? Let me represent a piece of knowledge by the phrase "X (the knower) knows that p (the proposition known)." An operational definition of the phrase would be a test whereby it could be decided whether or not in fact "X knows that p" is true in a given instance. X would be expected to exhibit some "p-knowing" behavior. A formula definition, on the other hand would specify what the phrase "X knows that p" means. A standard analysis indicates that three conditions must be met. "X knows that p" is true if and only if

1. X believes that p
2. p is true
3. X has adequate evidence that p

Since each of these is part of what is meant by 'knowledge' it is self-contradictory to hold that "X knows that p" and deny that any of the above is true. Thus, if X knows p, he also believes it. The idea of false knowledge is self-contradictory. And a person knows something only if he possesses reasonable evidence for it. If these three conditions are met, that is all that is necessary to ensure that "X knows that p" is true.

Some points of comparison between operational and formula definitions:

1. Operational definitions define by linking a term to another term with an observable referent. Formula definitions

define by breaking a concept down into constituent concepts. The concepts of knowledge, for example, is analyzed as justified, true belief. None of the analyzing concepts in a formula definition need have an observable referent.

2. It is the function of an operational definition to identify. It defines some X by telling us how to recognize when we have one. It is the function of a formula definition to clarify. A formula definition will tell us what 'X' means and, thus, enable us to be more precise in using 'X' and more effective in intellectual contexts where X is being thought about.

3. The ability to generate adequate operational definitions presupposes the ability to generate formula definitions. That is, the kind of clarity about what a concept means which is required in order to decide if a formula definition is true is a prerequisite for deciding whether a proposed operational definition actually succeeds in testing for what it is supposed to test for. One cannot decide on adequate testing procedures for something until he has achieved reasonable clarity concerning what it is he is testing for.

These points suggest the following with respect to educational language:

1. There is little merit to the view that goals are somehow clarified by stating them as behavioral objectives. Assuming for a moment that behavioral objectives may be treated as operational definitions for non-behavioral objectives, the above position would indicate that a set of behavioral objectives intended to operationalize some non-behavioral goal will simply reproduce whatever confusions may exist concerning the

non-behavioral goal. It may be, of course, that the attempt to operationalize a confused goal will lead back to the sourse of the problem and in that way will ultimately facilitate the clarification of the goal.

More to the point, conceptual clarity is logically prior to operational clarity. Operational definitions and/or behavioral objectives are no substitute for an adequate comprehension of the conceptual features of educational goals.

2. There is nothing inherently unclear about an unobservable or a non-behavioral goal, nor is there anything inherently clear about an observable or behavioral goal. The formula definition is a means for getting clear about a concept or a goal-concept which need not have any observable referent. The formula definition need not (although it may) define by using concepts having observable referents. Such definitions may, nevertheless, delineate a concept with considerable precision. Conversely, a term which refers to observable behavior may be quite vague. Consider, for example a term like 'working.' Looking for goals with observable or behavioral referents is no panacea for clarity.

3. Obviously, an evaluation language will talk the language of operational definitions. Identification of a goal is what evaluation is all about. Thus, terms with observable referents properly linked to the desired goal term are the sine qua non of evaluation.

4. It is likely, however, that formula definitionswill prove more useful for both curriculum planning and instructional planning. Consider again the definition of knowledge as justified true belief. If we accept such an analysis and if we are

interested in communicating knowledge there are implications for both curriculum planning and instructional planning.

Concerning curriculum planning the analysis suggests that our goals should include not only getting the student to learn that p, but should also include getting the student to learn the evidence for p. If we may generalize on the basis of this illustration, the point of interest is that formula definitions are useful in working from general curriculum goals to more specific ones. A formula definition of a general goal will give an indication of the features of that goal which will need to be incorporated into more specific objectives.

Concerning instructional planning, it should be equally obvious that an adequate grasp of the conceptual features of a goal will be useful in discovering instructional strategies appropriate to achieving that goal. Again, to know that knowing involves having evidence indicates that those instructional strategies most appropriate for communicating evidence will be in order when we wish to transmit knowledge. Activities such as reason giving, criticism and debate, or experimentation and inquiry, suggest themselves as plausible candidates for evidence transmitting. They are "evidence oriented" instructional activities.

The discussion of formula and operational definitions indicates that an observation language is a requirement only for the context of evaluation and that a non-observation language clarified by formula rather than operational definitions may be more useful for curriculum and instructional planning. This last comment should not be understood as asserting a requirement. It would be odd, for example, to insist that physical education

instructors should do their curriculum and instructional planning without the use of an observation language. We suspect, however, that where educational goals are cognitive or affective, for purposes of curriculum and instructional planning a non-observation language is most appropriate.

Behavioral - Non-behavioral

What exactly is behavior? Consider two candidates:

1. Behavior is action
2. Behavior is movements.

An action is something a person does as distinguished from something that happens to him. As such actions are characteristically intentional, voluntary, purposeful and goal oriented. Adding a column of figures, listening to Mozart and playing basketball are actions. Falling down the stairs, having a muscle spasm and digesting a steak are not actions.

A movement is a change in the spatiotemporal coordinator of a bodily part, (or in more limited contexts a chemical change).

We have already noted that actions appear to be "less observable" than movements since often one must know a person's intention or purposes in order to know what action he is doing. This has lead some philosophers and psychologists to conclude that a science of behavior must deal only with what Hull once called "colorless" movements. We repeat that such a move appears to exclude most of what is interesting about human beings and seems to us to be an unqualified disaster. The concept of behavior needs to be broad enough to include action.

The virtue of behavior is supposed to be that it can be observed and thus measured. Is this the case? We believe that

characteristically when we are interested in testing to see if a given goal has been achieved, it is behavior that we will measure. Behavior is what there is about people which is (a) observable and (b) relevant to deciding whether or not a given goal has been achieved. We have already noted (but it is important enough to repeat) that the desire to have objectives for which we can test requires behavioral evidence not behavior objectives. It needs also to be noted that it does not follow from the fact that what we can usually observe is behavior that all behavior is observable. There is a great deal that people do which they cannot be observed to be doing. Mental acts such as thinking, imagining, or appreciating are paradigmatic.

What follows is that when we insist on empirical evidence that a goal has been achieved, we will characteristically insist that our goals be satisfactorily tied to some behavior which will serve as an empirical indicator for the goal. What does not follow, is that any piece of behavior is satisfactory as behavioral evidence. A behavior may be unobservable and, thus, thoroughly unsatisfactory as a piece of evidence.

This has an obvious implication for the features desired of an evidence language for educational goals; namely, that it is necessary, but not sufficient that the terms of the evidence language refer to behavior. An evaluation language requires not only terms with behavioral referents, but terms with observable, behavioral referents.

While the evidence for an educational goal is almost always behavior, educational goals are rarely behaviors. This claim is not really as controversial or as suprising as might at first

seem to be the case. Consider, for example, that a standard format for writing a "behavioral objective" reads "the student will be able to do..." The phrase "will be able to do..." indicates that what is in fact aimed at is not behavior, but the capacity, ability or disposition to behave. I suppose that one might reply here that there is little merit in teaching the ability to do something if the learner nevertheless fails to do what he has learned when appropriate, but what follows from this is that educational goals may involve not only the ability to do, but the disposition to do when appropriate. Capacities, abilities, skills and disposition to behave are not, of course, behavior. Capacities, abilities, skills and dispositions are states. Behaviors are events.

This is not a particularly profound or important observation. No doubt, for example, people who hold that all educational objectives ought to be behavioral objectives will say "Of course, what we mean is that educational objectives should be capacities, abilities, and dispositions to behave." Well and good. However, neither is it the case that an educational objective must be a capacity, ability or disposition to behave.

Consider the following two goal statements:

1. The goal is that the student will be able to add a column of figures.

2. The goal is that the student will understand the law of commutation. As a result he will be able to add a column of figures.

The distinction between (1) and (2) is the difference between a goal which is the capacity to do something and a goal which while it is not itself the capacity to do something

implies or results in the capacity to do something. (The distinction may often be a matter of where one desires to place the emphasis. One might, for example, say "The goal is that the student will be able to add, therefore, I will teach commutation.") Three things of interest follow:

1. There are some perfectly respectable educational objectives which are neither behaviors nor the capacity, ability, or disposition to behave.

2. It does not follow that there is not any behavioral evidence for such goals. Since such goals imply potential behavioral differences, they can be tested for empirically.

3. The distinction permits (not requires) us to be disinterested in the behavioral consequences of a goal <u>except</u> as evidence. Such an attitude may prove particularly important for goals which can be characterized as humanistic, liberal, or affective where we are often more interested in what a person is than in what he does. We believe that such goals have behavioral consequences and, thus, (in principle if not always in practice) can be tested for. We do not, however, believe that such goals are behaviors or even that their behavioral consequences need be important outside the context of evaluation.

The preceding discussion suggests that it may be useful to distinguish between a narrow and a broad form of the claim that a goal is behavioral or non-behavioral. We will thus adopt the following conventions:

Behavioral or Non-Behavioral in the narrow sense (B(n) or N-Bn): Here we will count as B(n) only a specific behavioral event or group of such events. Capacities, abilities or dispositions to behave will not count as B(n).

Behavioral or Non-Behavioral in the broad sense (B(b) or N-B(b)): Here we will count as B(b) both behavioral events and capacities, abilities or dispositions to behave. However, goals which only have behavioral consequences will be N-B(b).

Given these distinctions, the preceding discussion suggests the following concerning the connection between the concept of behavior and our usage categories.

1. Terms in an evaluation language should refer to B(n). It is actual behavioral occurrences which can be seen and which can thus provide empirical evidence that a goal has been accomplished.

2. Since, as noted, B(n) is rarely an educational goal, it follows that for both purposes of instructional planning and purposes of curriculum planning, we will use a language whose goal terms refer to N-B(n).

3. As far as the concerns of this paper are concerned we see no reason to prefer B(b) or N-B(b) for purposes of curriculum planning or instructional planning. Here the kind of goal statement to be used will depend on what it is that one wishes to teach and why. We suspect that educational programs with practical or instrumental goals will tend to have more goals which are B(b) while more of the intrinsic goals of education will be N-B(b). Of course, an adequate educational program will involve both.

Clear - Vague

In the discussion of the distinction between the observable and the non-observable we were lead to distinguish between two types of definitions, operational definitions and format

definitions. There we held that it was the function of an operational definition to identify while it was the function of a format definition to clarify. The same point could have been made by distinguishing two sorts of clarity. One can say that there are two kinds of clarity, operational clarity and conceptual clarity. Operational clarity clarifies an enterprise called identification. When we have achieved operational clarity we are clear on how to do something. We are clear on how to identify the presence of something. The vehicle for operational clarity is the operational definition.

Conceptual clarity clarifies meaning. When we have achieved it, we know the content of a concept or the meaning of a term. We are clear on how to employ that concept or term correctly. As we have indicated, conceptual clarity is typically a precondition of achieving operational clarity.

Corresponding to operational and conceptual clarity will be operational and conceptual vagueness.

We wish to focus on conceptual vagueness. We shall distinguish vagueness from some similar concepts with which vagueness is easily confused.

Vagueness may be distinguished from meaninglessness and vacuousness.

By a vague concept we shall mean one with indeterminate conceptual boundaries. The ideal of conceptual clarity consists in stating a formula definition which (1) states necessary and sufficient conditions for the correct employment of a concept and (2) distinguishes for every object and event whether or not that object or event is a member of the class of things delineated by the concept.

A concept may be vague in two ways. First, it may be that there are concepts such that there are no necessary and sufficient conditions for their use. The Cambridge philosopher, Wittgenstein, argued that many concepts exhibit a property which he called family resemblance. A concept exhibits family resemblance when each member of the concept exhibits some property or properties rendering it similar to other members of the concept, but where no particular property is always necessary for a thing to be a member of that concept and where no set of properties is sufficient to be a member of that concept. Wittgenstein uses the illustration of the concept of a game. The instances of the concept of a game are like the threads in a rope says Wittgenstein. Each is intimately bound up with many others. Each is a part of the whole. But no thread runs the entire length of the rope. Thus, every instance of the concept of a game has properties common to many games, but there is no set of properties which every game shares with every other and in virtue of which it is a game. For many concepts threads of commonality hold them together, but there is not a set of necessary and sufficient conditions which define them.

Many concepts fail to sharply distinguish instances from non-instances in that there are borderline cases. A classic example is the black swan. Upon the discovery of a black swan-like bird in Australia, taxonomists were faced with the question as to whether the bird was in fact a swan or whether it should be given its own class. The question concerned whether or not whiteness is essential to being a swan. It was a question of a concept with an indeterminate border. It was not clear whether the concept of a swan included whiteness. It has, of course,

been decided that it does not. The point of interest here is that the question really required a decision, not a discovery. One could not discover whether or not whiteness was part of the concept of swan by analyzing the concept since the concept was vague on the matter. Our concepts often appear to be formulated to distinguish paradigm cases from paradigm non-cases and are, thus, vague on how atypical cases should be treated. Atypical instances thus tend to show us the vague boarders of our concepts.

Two points may be noted about vagueness, thus, understood. First, paradoxically, vagueness is something we can be clear about. That is, the family resemblance aspects of a concept or the points at which a concept's boundaries are vague can be described and described with precision. Thus, to say that a concept is vague implies neither that it is meaningless, nor that we do not know what it means.

Second, vagueness should not be assumed for all purposes to be a defect in a concept. It is worth considering that our concepts may be subject to a certain amount of natural selection. Thus, there may be a certain degree of fitness in those which survive. I do not mean to suggest that "ordinary language" concepts are inviolable. Rather I wish to suggest that many ordinary language concepts may have developed such that the conceptual features they exhibit, including their particular kinds of vagueness, are well suited to the verbal role which they usually perform. There should, thus, be a presumption in favor of their utility. A concept where instances exhibit a degree of family resemblance may be functional because there is a purpose to be fulfilled in grouping closely associated items under a common label. Likewise, a vague boundary may give some

intellectual flexibility to a concept or merely avoid the cumbersomeness that pointless precision can sometimes induce.

It is important to note that the ways in which a concept may be vague are part of the meaning of the concept. Thus, when we eliminate vagueness, we change the concept's meaning. This is, of course, a pervasive problem in measurement in the behavioral and social sciences. In order to generate operational definitions for a concept we find it necessary to smooth off its rough edges a bit, to make it more precise, and we find as a result that we have altered the subject of inquiry. (Intelligence testing is an obvious instance.) It does not follow that it is never proper to smooth rough conceptual edges. What follows is that this should be done only when there is something particular to be accomplished as a result. Clarity is not an "all purpose virtue" nor is vagueness an all purpose defect.

We shall consider a concept to be vacuous if having achieved clarity concerning its meaning we are left unable to distinguish instances from non-instances in most cases. Consider, for example, the concept of a good citizen. Let us define a good citizen as one who adequately fulfills his legitimate duties toward the state and the community. Now there is nothing inherently objectionable about this as a formula definition. The definition, however, is not immediately helpful in deciding whether an individual is a good citizen because it contains the phrase "legitimate duties." Clearly, there is not going to be substantial agreement on what such duties are. Further, the question of what will count as legitimate duties is a substantive rather than a formal matter.

That is, a decision will involve complex empirical and moral judgments and cannot be adequately made on the basis of a conceptual analysis of the meaning of the phrase "legitimate duties."

With this example as background, we may now redefine (this is a stipulative definition) a vacuous term as one such that a decision as to what counts as an instance presupposes the answer to a substantive question raised by the term's formula definition. A vacuous concept will then be one where agreement on what a term means will be insufficient to determine the instances.

Concepts of this sort are likely to be recurrent and perhaps indispensible in policy discussions concerning curriculum. Few of us will doubt that schools should create good citizens, educate the whole man, and promote the growth of the individual. Few of us could agree on what would count as succeeding in any of these.

Such concepts may have a useful intellectual function at a high level of abstraction. We may be able to coherently decide whether to emphasize citizenship or vocational education without agreeing what would count as instances of either. But such concepts appear to us to be dangerous intellectual tools since they can create an illusion of having achieved agreement on a set of goals or indeed of having achieved some idea of what our more specific curriculum goals will be when no such agreement exists. Further, such concepts may obscure some serious substantive moral or social issues.

Both vacuity and vagueness should be distinguished from meaninglessness. We wish to use the word meaningless literally.

A term which is meaningless has no meaning. Such terms have no content, no referents and no place in educational thought.

Clarity and its opposites relate to our usage concepts as follows:

1. Evaluation requires operational clarity. This is (hopefully) obvious enough as to not require argument. Insofar as achieving operational clarity presupposes conceptual clarity the latter is also required for evaluation.

2. We do not believe that there are contexts where vagueness or vacuity are positive virtues. We do, however, as we have noted, believe that there are places where vagueness and vacuity are not effectively eliminable and they should be tolerated. This will tend to be the case at the level of policy discussion concerning curriculum.

CONCLUSIONS

One obvious conclusion we hope will be drawn is that the task of generating a language adequate for characterizing the various possible forms of educational goals is a complicated matter. We hope to have made three contributions toward this end. First, we hope to have provided an ideological context in which the problem is real and meaningful. Second, we hope to have made a reasonable start on getting a grasp on some of the concepts necessary for a sophisticated goal language. Finally, we hope to have generated some plausible hypotheses concerning the relations between the form and function of educational goals.

It is worth noting that the features which a behaviorist view of educational objectives maintained were the features of properly formed objectives per se, have turned out to be the features of a properly formed evaluation language. Terms in an evaluation language should be clear and should have specific, observable, behavioral referents. Thus, one general conclusion to which this paper points is that we should take care not to uncritically impose the features of an evaluation language on a goal language which has a different intellectual function.

One last remark: Many of these hypotheses concerning form and function should be taken as no more than loose generalizations. The best form for a goal will depend on more than the three usage categories noted. We have, for example, said something concerning the ways in which form will relate to subject matter or the way in which it will relate to the age or other aspects of students. We suspect, for example, that while curriculum

objectives for first grade math should be quite specific, if one is teaching college political theory "having a reasonable opinion about liberal ideology" is about as specific as one should get. Thus, we hope that the reader will be good enough to insert some "by-in-large-and-for-the-most-parts" where they are obviously needed.

NOTES

1. Robert Mager, Preparing Instructional Objectives, (San Francisco: Fearon Publishers, 1962), p. 3.

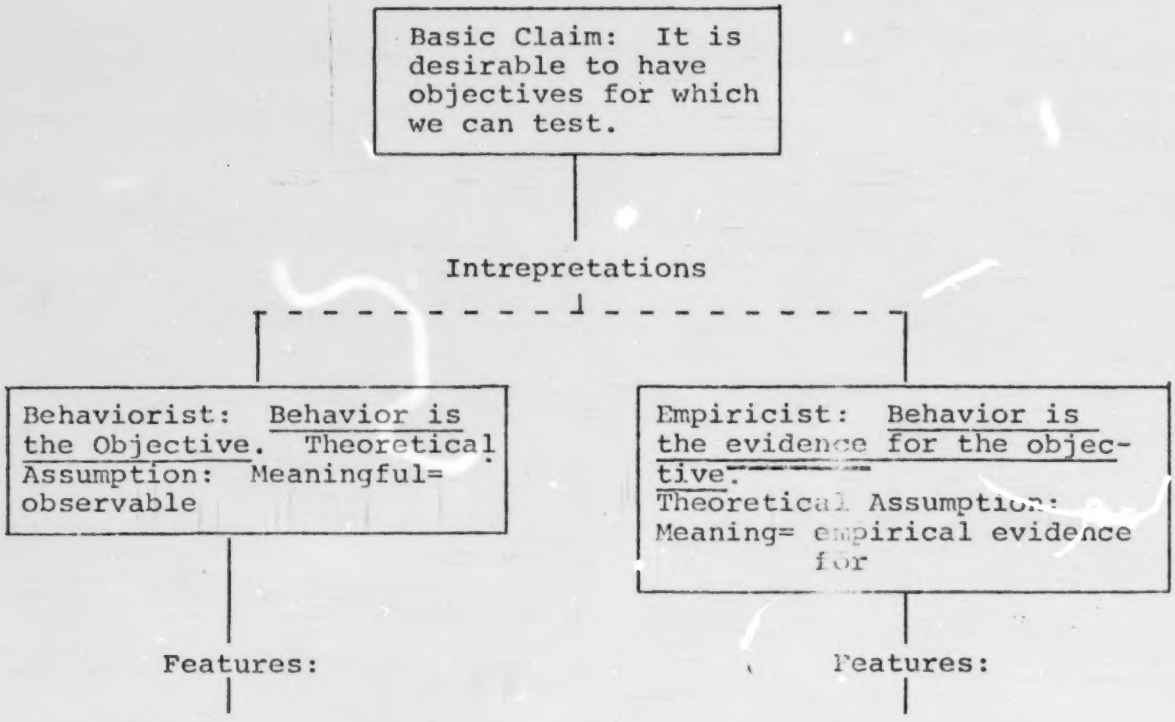
2. B. F. Skinner, "The Operational Analysis of Psychological Terms," In Fiegl and Brodbeck, Readings in the Philosophy of Science (New York: Appleton-Century-Crofts, 1953), p. 585.

3. To insist on the importance of a distinction between a goal and its evidence is not the same thing as insisting that we not teach test items. Behavioral objectives are usually formed as classes of behaviors. (e.g. Given conditions C the student will be able to solve addition equation with a value less than ten") A particular test item asks the student to exhibit one member of this class of behaviors. Cognitive goals, however, are not usually classes of behaviors. They are more adequately considered to be states of a person which have behavioral consequences. See pp. 24-25 for related discussions.

4. Advocates of behavioral objectives often object to being criticized as behaviorists claiming that a commitment to behavioral objectives does not require a commitment to behaviorist psychology. No doubt we should take their word on this. It is worth noting, however, that the view that only those terms which refer to observable objects or events are permissible in a scientific language is a major methodological commitment of some behaviorist views. Insofar as behavioral objectives advocates ascribe to ideas about educational objectives which seem to assume such a doctrine the label 'behaviorist' is not entirely misplaced. Indeed, the phrase 'behavioral objective' is suggestive of an unwillingness to distinguish a goal and the behavioral evidence for it which we regard as the major feature of a behaviorist view. Non-behaviorists in the movement would do well to substitute the phrase "behavioral evidence" since it is both more accurate and less provocative.

Appendix I

IDEOLOGY CHART


Basic Claim: It is desirable to have objectives for which we can test.
Intrepretations
Behaviorist: Behavior is the Objective. Theoretical Assumption: Meaningful= observable
Empiricist: Behavior is the evidence for the objective.
Theoretical Assumption: Meaning= empirical evidence for
Features:
Features:

1. All good goals are specific, observable, behavioral, and clear.
2. Specificity, observability, "behaviorality" and clarity are logically related.
3. The form of a good goal statement does not vary with its functions.

1. A good goal may be general or specific, observable, behavioral, or non-behavioral, and clear or vague.
2. Generality-specificity, observability-unobservability, "behaviorality - non-behaviorality", and vagueness - clarity are logically independent.
3. The form of a good goal statement varies with its function.

Appendix II

SUMMARY GOAL LANGUAGE TYPICAL FEATURES
FOR USAGE CATEGORIES:

I. Curriculum Planning

A. Policy Discussion:

1. L-general and R-general
2. Observable or Unobservable
3. Non-Behavioral (n) and Behavioral (b) or Non-Behavioral (b)
4. Vague or Vacuous Goals may be permitted

B. Curriculum Generation:

1. L-general to L-specific
2. Observable or Unobservable
3. Non-Behavioral (n) and Behavioral (b) or Non-Behavioral (b)
4. Vague or Vacuous Goals pose problems for moving from L-general to L-specific.

C. Curriculum Content:

1. L-specific and R-general
2. Observable or Unobservable
3. Non-Behavioral (n) and Behavioral (b) or Non-Behavioral (b)
4. Conceptually Clear Goals important.

II. Instructional Planning

A. L-general and R-general or L-specific and R-general

B. Observable or Unobservable

C. Non-Behavioral (n) and Behavioral (b) or Non-Behavioral (b)

D. Vague or Vacuous Goals may be permitted

III. Evaluation

A. L-specific and R-specific

B. Observable

C. Behavioral (n)

D. Operational Clarity required

Appendix III

GLOSSARY

GENERAL - SPECIFIC

L-general and L-specific: L-generality and L-specificity concern the level of abstraction of a concept from particulars.

R-general and R-specific: R-generality and R-specificity concern the number of instances of a concept.

OBSERVABLE - UNOBSERVABLE

Operational Definition: An operational definition is a statement which links a term to be defined with some test or observation by means of which the referent of that term can be identified.

Formula Definition: A formula definition is a statement which defines the meaning of a term by specifying the essential properties which a thing must have or the criteria which it must fulfill to be a thing of that sort.

BEHAVIORAL - NON-BEHAVIORAL

Action: An action is something a person does as opposed to something that happens to him.

Movement: A movement is a change in the spatio-temperal coordinates of a bodily part.

Behavior: A behavior is an action or a movement.

Behavior (narrow) Non-Behavior (narrow): Behavior (n) is a particular act or movement or a class of acts or movements, but not the disposition or capacity to do an act or movement.

Behavior (broad) Non-Behavior (broad): Behavior (b) is a particular act or movement, a class of acts or movements, or the disposition or capacity to do an act or movement.

CLEAR - VAGUE

Conceptual Clarity: Conceptual clarity is that sort of clarity which clarifies the meaning of a concept.

Operational Clarity: Operational clarity is that sort of clarity which clarifies the enterprise of identification.

Vague: A vague concept is one with undeterminate conceptual boundaries such that there are no necessary and sufficient conditions for the use of the concept or such that the concept

GLOSSARY (Continued)

does not distinguish for every object or event whether or not the object or event is a member of the class of things delineated by the concept.

Vacuous: A vacuous concept is one such that a decision as to what counts as an instance presupposes the answer to a substantive question raised by the terms formula definition thus rendering agreement on meaning insufficient to determine the instances of the concept.

Meaningless: A concept is meaningless when it literally means nothing.